

ETHNOBOTANICAL STUDIES ON SOME IMPORTANT MEDICINAL PLANTS OF IMPHAL EAST AND WEST DISTRICTS OF MANIPUR, NORTH EAST INDIA

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Abstract

Imphal East and West are two densely populated districts of Manipur, inhabited by diverse communities. In order to document information on medicinal plants their uses, a survey was conducted in 2014-2018 in various locations within the two districts. During this study it was observed that the traditional healers use several medicinal plants from adjoining forests. They also grow and sell several such plants in their kitchen garden for daily use, both as food and herbal remedies, for common ailments such as cough, cold, dysentery fever etc. Due to over-harvesting, modernization, urbanization, and predominantly jhum cultivation, the importance of such traditional uses of medicinal plants is gradually declining. There is an urgent need to focus on scientific validation, conservation, recognition of plant-based traditional healing, to resurrect this neglected knowledge. Also, immediate attention is required to conserve particular medicinal plants along with traditional knowledge associated with them. Needless to say, there is an overarching need to record the rich indigenous knowledge of medicinal plants of Imphal East and Imphal West Districts of Manipur, before it is too late.

INTRODUCTION

Traditional plant medicine (ethnobotany) is one of the common practices being followed by many traditional communities all over the world and the term ethnobotany was coined by John W Harshbergers (1895). The practice is more common in and around forests, varying across ecological regions. Diverse communities and cultures use a variety of plant for treatment of various ailments in their daily life. Due to modernization, urbanization and deforestation, people are nowadays are gradually neglecting their cultural and traditional knowledge of treatment of many ailments.

There is thus an urgent need to revive and restore such valuable knowledge on ethno medicine. Northeast India, which includes the focus state of Manipur, is part of two global Biodiversity Hotspot. Manipur state in particular, is located in the Indo-Burman Region (IBR) Biodiversity Hotspot, which ranks 6th amongst the 34 Biodiversity Hotspot of the world (Manipur State Biodiversity Board, 2005).

The people are commonly known as Manipuris, and the major community is called the Meitei. The state is known for its ecologically distinctive and diverse array of flora and fauna, especially medicinal plants, in addition to the rich cultural diversity. Since time immemorial, the Kings of Manipur had adopted the use of folk medicine.

Traditional healers of Manipur were found to play great roles in the primary health care systems as well as curing common ailments with much success. This explained the greater preference towards folklore medicine by Manipuris than to modern medicine (Ningombam et al., 2014). Several studies of the plants of Manipur have been conducted (Shukla and Baishya, 1979), and uses of some medicinal plants discussed (Singh et al., 2003), and plants of sacred, medicinal and religious importance reported (Khubongmayum, 2004).

The latter described information on medicinal plants, and gave accounts of detailed treatment of several ailments. An attempt is being made to explore and document the common medicinal plants used by the people of Manipur, particularly Imphal East and Imphal West, to explore the possibility of bringing awareness to conserve the medicinal flora, keeping in mind the rapidly developing herbal-based industries.

The overexploitation of medicinal plants and plant products, particularly by the pharmaceutical industry, needs to be balanced by the urgent replenishment and conservation of the rare and important plant species. Thus, keeping this in view, the present study was conducted to create aware, conserve and use of medicinal plants.

Study site and the Community

The study site is situated between 23°50' N and 25°41' N latitude and between 93°2' E and 94°47' E longitude with a total area of 22,327 km² (Sinha 1996).

The study was conducted in Imphal East and West districts of Manipur (fig. 1) during 2014-18. Imphal East (24°51'N 93°57'E) Imphal West (24°49'N 93°52'E) has a total area of 497 km², with notable villages such as Achanbigei, Ahallup, Heingang, Mantripukhi, Kairang, Sangakpam, Khurai, Kongba, Porompat, Nagaram etc.

Imphal West (24°49'N 93°52'E) has a total area of 519 km², with prominent villages such as Langol, Lamsang, Lamdeng, Thangmeiband, Uripok, Sagolband, Chingmeirong, Kwakeithel etc. The study site has an average elevation of 790 meters above sea level. The climate across the study site varies from tropical to temperate, with an annual rainfall range of 975-2646 mm. Some of the main ethnic groups populating Imphal East and West are Meetei, Meetei Pangan, Tangkhul, Kabui etc.

Seven types of forests are found within the study site - Wet Temperate Forest, Pine Forest, Wet Hill Forest, Semi Evergreen Forest, Teak Gurjan Forest, Bamboo brakes Forest and Grass brakes forest (Manipur State Biodiversity Board, 2005).



Figure 1: Locator map of Manipur

METHODS

The ethnobotanical survey was conducted twice a year (Feb-April and Sep-Nov) from 2014-2018 in the urban and rural zones of (East and West) Imphal, particularly Thangmeiband, Uribok, Sagolband, Lamsang, Lamdeng, Taothong, Achanbigei, Heingang, Laiphamkhunou, Khabam and Ahallup. The questionnaires were devised to identify the indigenous knowledge of herbal remedies from local people through five focused group discussions (FGD). The focus was on people who were familiar with traditional knowledge on plants of their respective community, especially plant part used for medicinal purposes, for which ailments, method of use, preservation systems etc. Survey was conducted in 128 households. Some of the important knowledge from the focused group discussion with the villagers indicated that harvesters went twice or thrice a month for collecting medicinal plants from the forest. A total of 128 household survey was conducted, including 18 traditional healers (8 female and 10 male). Five FGD's were conducted in various parts of the study site. Quantity of plant or plant part collected sometimes depended on availability of the same. e.g. *Shamba* (*Oroxylum indicum*) and *Mukthruhi* (*Zanthoxylum armatum*).

This study also included informal and formal group discussions with women of different age group in order to augment information. Information recorded included local/vernacular name of the plant, part used, habitat and distribution pattern. The primary data thus obtained was later processed with and tabulated with metadata.

To understand the traditional knowledge related to these medicinal plants, ethno-botanical survey was conducted at various villages of the study site.

RESULTS

Around 30-50 kg per harvester of collected plant (parts) were sold for cash to buyers in their respective villages, who sell them later to outside customers. The village buyers thus are buyers and also retailers of these medicinal plants. The plants are sold fresh or dry, whole or in parts, as per economic value of individual plants. Collectors retain some of the harvest for their own use. For the past five years (2014-2018), the prices have remained unchanged. However, in recent years, there has been an increased demand for plants such as *Lemon grass* (*Cymbopogon citratus*) and *Ginseng* (*Panax ginseng*), sold illegally across the border to the neighboring Myanmar (Manipur Medicinal Plant Board, 2005). Middlemen could pay up to Rs 500/kg for Ginseng and Rs 700-1000/kg for us *Lemon grass-Haona* in Manipuri. Harvesters earn roughly Rs 3500 per month from medicinal plants, more or less, varying across seasons and/or species harvested. Harvesting is a year-long activity, with no specific collecting season. The harvesters are completely untrained, nor taught to improve their collection practices. The age of harvester ranged from 30-80 years. A recent development is harvesters cultivating some important medicinal plants in Imphal valley.

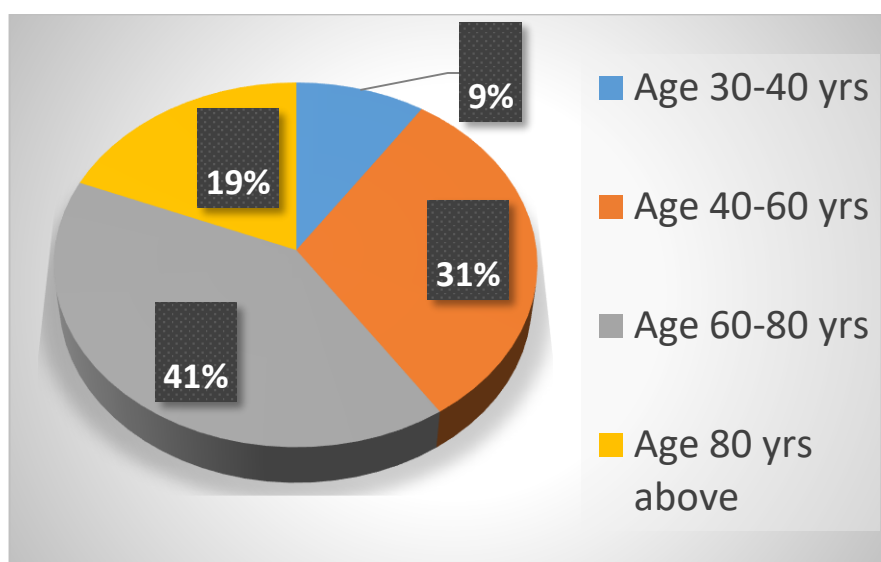


Figure 2: Age Ratio of knowledge of Medicinal plants

Thirty medicinal plant species used by locals for varied ailments were documented in this study, some of which have already been well recognized as medicine in Ayurveda, an Indian System of Medicine (Pratapjyoti, 2009). Table 1 lists the details of these 30 plant species with their scientific name, family, local/vernacular/common name, medicinal use, part used, and economic value. The study found that people living close to forest and agricultural land had more knowledge and experience of treatment of various ailments through traditional medicinal plants. It was clear that elders had more ethnobotanical knowledge than the young. Women had more knowledge on traditional medicinal plants than men, as indicated by the survey.

Among 30 medicinal plants studied, *Maroinapakpi* (*Allium hookeri*), *Kanghu Blue ginger*

(*Alpinia galanga*), and *Mukthruhi* (*Zanthoxylum armatum*) are the most popular medicinal plants used by people traditionally, mainly due to easily availability, low price and perceived better efficacy as compare to allopathic medicine. Other plants such as *Yellang* (*Polygonum orientale*), *Awa-phadigom* (*Eryngium foetidum*), *Naosek-lei* (*Ocimum basilicum*) are also commonly used at household level on daily basis as flavoring agent in preparation of curry and consume as salads. Leaf part of *Daopata-achouba* (*Cassia alata*) plant is commonly used by fishermen for catching fish. It was observed in field that the distribution of the plants such as *Oak hidak* (*Acorus calamus*) is highly acclimatized to variable climatic conditions (Rawat and Shankar 2013) whereas *Black turmeric* (*Curcuma caesia*) is common in tropical areas. *Haona* (*Lemon grass*) grows in the forest at low and high elevation and also people cultivate for sale. Further, *Kombirei* (*Iris bakeri*) is particularly common and cultivated in the wetlands of Lamphepat and Yarelpāt. This plant flowers blooms only for 15-20 days of the year (March-end to mid-April) coinciding with the Manipuri New Year (Cheiraoba), where these flowers are used for special offerings. Plants such as *Shamba* (*Oroxylum indicum*) and *Mukthruhi* (*Zanthoxylum armatum*) are mainly harvested for trade. Thus, various bioclimatic regions of study site hosts diverse sets of medicinal plants, which the locals are very familiar with, in terms of distribution and utility.

Conservation:

The landscape of the two Imphal districts of Manipur exhibits a gradient of diverse bioclimatic regions – from tropical, subtropical, to temperate, and even alpine. This ensures a very diverse array of plant types within a small area. This is especially true for medicinal plants, growing naturally in the most part of the districts. Some of these are endangered and threatened even in this region, and it's important to protect these species in the wild with community participation. There is a pressing need to encourage the community to also cultivate these plants in their backyard and agriculture land, to reduce the dependency on wild sources and consequently reduce impacts on wild populations. Regeneration of these medicinal plants needs to be protected from fire, grazing by wild and domestic animals, trampling, soil degradation etc. Interventions such as targeted planting and forest protection/restoration are important to ensure adequate regeneration and repopulation of these species. However, this would be difficult in plants such as *Mukthruhi* (*Zanthoxylum armatum*), *Moirang Khanam* (*Clerodendrum serratum*), and *Shamba* (*Oroxylum indicum*). This is because seeds of these plants have seeds with very hard seed coats, and take very long periods for germination. Further, plants such as *Oak-hidak* (*Acorus calamus*) and *Kanghu* (*Blue ginger*) grow in marshy habitats through vegetative propagation (rhizomes). *Maroi-napakpi* (*Allium hookeri*) too propagates naturally through bulb, mostly in black soil. *Bhubati* (*Andrographis paniculata*) is cultivated through seeds, although it occurs naturally in valleys and on hills. *Yaimu* (*Curcuma caesia*) and *Takhellei Angouba* (*Hedychium coronarium*) are cultivated in water-logged places using rhizome cuttings. *Awa-phadigom* (*Eryngium foetidum*) is commercially cultivated widely in both hills and valleys, as well as in kitchen gardens. *Naosek-lei* (*Ocimum basilicum*) is propagated through seeds particularly in black soil. *Shamba* cultivated in the foothills and slopes. Both *Shamba* (*Oroxylum indicum*) and *Mukthruhi* (*Zanthoxylum armatum*) are propagated through seeds. Notably, plants such as *Moirang Khanam* (*Clerodendrum serratum*),

Terapaibi (*Gynura nepalensis*), *Yai thamna manbi* (*Kaemferia galanga*), and *Kwa-mana-manbi* (*Smilax ovalifolia*) are used for household consumption and not sold for cash. Plant (parts) collected from forest are exchanged or bartered from household to household, and across the communities.

Plants such as *Maroinapakpi* (*Allium hookeri*), *Awa-phadigom* (*Eryngium foetidum*), *Yellang* (*Polygonum orientale*), *Chu-chu rangmei* (*Sesbania grandiflora*) etc are the plants that are sold in local markets for both medicinal purpose, and also as food. And lastly, there are plants that are in high demand for domestic and international trade, and known also by their trade name e.g *Oak-hidak* as Vach or Sweet Flag, *Kanghu Blue ginger* as Galangal, *Ningthou khonglee* (*Tinospora cordifolia*) as Giloy. *Nungarei* (*Asparagus filicinus*) as *Shatavari*, *Panggonglei* (*Butea monosperma*) as *Dhak/Palas*, *Yaimu* as *Thikur*, *Haona* as *lemon grass*, *Shamba* as *Tetuchal*, and *Mukthrubu* as *Timru/Timur/ Tejbal*.

Table 1: List of medicinal plants of Imphal (East & West) with names, uses, and their value

Sl. No.	Scientific name and RET	Family	Local/Common Name	Medicinal values	Parts use	Market value. Rs/kg
1.	<i>Acorus calamus</i> Linn (Endangered)	Araceae	Oak-hidak/sweet flag	Cold, cough, fever	Rhizome	20-25
2.	<i>Allium hookeri</i> Thw (Cultivated)	Liliaceae	Maroinapakpi	Reducing High Blood Pressure	Whole plant	150-200
3.	<i>Alpinia galanga</i> (Linn.) (Least concern)	Zingiberaceae	Kanghu Blue ginger / Thai ginger	Regulate blood circulation	Rhizome	25-30
4.	<i>Andrographis paniculata</i> Burm.f.) Wall(Least concern)	Acanthaceae	Bhubati/ King of bitters/ Chiraitta	Chronic fever	Leaves	100-200
5.	<i>Asparagus filicinus</i> Buch. Ham.(Domestic)	Liliaceae	Nungarei/ Fern Asparagus	Dysentery & epilepsy	Tuber	100-150
6.	<i>Butea monosperma</i> (Lam.) (Endangered)	Papilionaceae	Panggonglei/ Butca Gum Tree	Diarrhoea, dysentery, snake bite	Leaves bark, gum, seed	200-400
7.	<i>Cassia alata</i> (Linn.) Roxb. (Endangered)	Caesalpiniaceae	Daopata-achouba / Candle bush	Diabetes, skin diseases	Leaves	Non-marketed
8.	<i>Cinnamomum tamala</i> (Buch. Ham.)	Lauraceae	Tejpata/ Indian bay leaf	Dizziness, headache	Leaves	80-100

	(Endangered)					
9.	<i>Clerodendrum serratum</i> (Linn.) Moon(Endangered)	Verbenaceae	MoirangKhanambi/ Bayflower / Bleeding Heart	Fever, dysentery, asthma, bronchitis	Leaves, stem	Non-marketed
10.	<i>Clerodendrumcolebrookianum</i> (Walp.) (Endangered)	Verbenaceae	Kuthap / Glory bower	Skin, diseases, dysentery	Leaves	Non-marketed
11.	<i>Curcuma caesia</i> (Roxb.) (Endangered)	Zingiberaceae	Yaimu / Black turmeric	Cough, dysentery	Rhizome	200-500
12.	<i>Cymbopogon citratus</i> (D.C.) Stapf (Cultivated)	Gramineae	Haona / Lemon grass	Indigestion	Leaves	900-1000
13.	<i>Eryngium foetidum</i> (Linn.) (Least concern)	Apiaceae	Awa-phadigom / Culantro / Mexican Coriander	Arthritis	Whole plant	80-100
14.	<i>Euphorbia hirta</i> (Linn.) (Least concern)	Euphorbiaceae	Pakhangleiton / Asthma plant/ Hairy spurge/garden spurge	Diarrhoea, dysentery & colic pain	Young stem & flower	Non-marketed
15.	<i>Gynura nepalensis</i> (DC.) (Wild)	Asteraceae	Terapaibi/ Ashitaba	Against stomach ulcer	Young stem & flower	Non-marketed
16.	<i>Hedychium coronarium</i> (J.Koenig). (Endangered)	Zingiberaceae	Takhelleiangouba / White ginger lily	Cough, vomiting	Rhizome	150-200
17.	<i>Iris bakeri</i> (Chapin) (Threatened)	Iridaceae	Kombirei / Manipuri Iris	Brain coolant & Hysteria	Rhizome	300-500 per plant
18.	<i>Jatropha gossypifolia</i> (Linn.) (Rare)	Euphorbiaceae	Kege-manbi/ Bellyache bush/ Black physic nut	Eczema, leprosy & snake bites	Leaves & root	Non-marketed
19.	<i>Kaempferia galanga</i> (Linn.) (Least concern)	Zingiberaceae	Yaithamna-manbi / Aromatic ginger	Baldness	Rhizome	Non-marketed
20.	<i>Mimosa pudica</i> (Linn.) (Least concern)	Fabaceae	Kangphal-ikaithabi/ Touch-me-not / Sleepy plant	Piles & jaundice	Young shoot	Non-marketed
21.	<i>Ocimum basilicum</i> (Linn.) (Least concern)	Lamiaceae	Naosek-lei / Thai basil / Sweet basil	Fever	Leaves & young shoots	100-200

22.	<i>Oroxylum indicum</i> (Linn.) Benth. ex Kurz. (Rare and Threatened)	Bignoniaceae	Shamba / Indian Trumpet Tree / Broken Bones Tree	Gastric ulcer, tonsil	Leaves & seed	15-20
23.	<i>Piper longum</i> (Linn.) (Least concern)	Piperaceae	Tabopi / Long pepper	Jaundice, laxative	Root & fruit	300
24.	<i>Polygonum orientale</i> (Linn.) (Cultivated)	Polygonaceae	Yellang / Prince's feather	Tonic & against Headache	Tender leaves & shoots	100-150
25.	<i>Sesbania grandiflora</i> (Linn.) Poiret. (Least concern)	Papilionaceae	Chuchu-rangmei / Agati or hummingbird tree	Diabetes	Young fruit	150-200
26.	<i>Sida rhombifolia</i> (Linn.) (Least concern)	Malvaceae	U-han / Arrowleaf Sida.	Urinary disorder, rheumatism	Leaves	200
27.	<i>Scutellaria discolor</i> (Wallich. ex Benth.) (Least concern)	Lamiaceae	Yenakhat / Bicolor Skullcap	Menstrual pain	Leaves	Non-marketed
28.	<i>Smilax ovalifolia</i> (Roxb.) (Wild)	Liliaceae	Kwa-mana-manbi / Kumarika	Skin diseases	Aerial part	
29.	<i>Tinospora cordifolia</i> (Thunb.) Miers. (Least concern)	Menispermaceae	Ninthou-khong-lee/ Heart-leaved moonseed / Guduchi	Diarrhea & muscular sprain	Leaves	15-20
30.	<i>Zanthoxylum armatum</i> DC (Threatened)	Rutaceae	Mukthruhi / Winged Prickly Ash	Mouth ulcer, chronic fever, cough	Bark, fruits and seeds	75-100
* Collected from the wild/forest, @ domestic plants grown in kitchen gardens and homes						

Table 2: List of threatened/rare/endangered medicinal plants

Sl. no.	Scientific Name and RET	Family/habitat	Local Name	Medicinal values	Parts use
1.	<i>Acorus calamus</i> Linn (Endangered)	Araceae/herb	Oak-hidak	Cold, cough, fever	Rhizome
2.	<i>Butea monosperma</i> (Lam.) (Endangered)	Papilionaceae/shrub	Panggonglei	Diarrhea, dysentery, snake bite	Leaves bark, gum, seed
3.	<i>Cassia alata</i> (Linn.) Roxb. (Endangered)	Caesalpinaceae/shrub	Daopata-achouba	Diabetes, skin diseases	Leaves
4.	<i>Cinnamomum tamala</i> (Buch. Ham.) (Endangered)	Lauraceae/tree	Tejpata	Dizziness, headache	Leaves
5.	<i>Clerodendrum serratum</i> (Linn.) Moon. (Endangered)	Verbenaceae/shrub	Moirang Khanam	Fever, dysentery, asthma, bronchitis	Leaves, stem
6.	<i>Curcuma caesia</i>	Zingiberaceae/h	Yaimu	Cough, dysentery	Rhizome

	(Roxb.)(Endangered)	erb			
7.	<i>Hedychium coronarium</i> (J. Koenig) (Endangered)	Zingiberaceae/h erb	Takhellei angouba	Cough, vomiting	Rhizome
8.	<i>Iris bakeri</i> (Chapin) (Threatened)	Iridaceae/herb	Kombirei	Brain coolant & Hysteria	Rhizome
9.	<i>Jatropha gossypifolia</i> (Linn.) (Rare)	Euphorbiaceae/ shrub	Kege-manbi/	Eczema, leprosy & snake bites	Leaves & root
10.	<i>Oroxylum indicum</i> (Linn.) Benth. exKurz(Rare and Threatened)	Bignoniaceae/ tree	Shamba	Gastric ulcer, tonsil	Leaves & seed
11.	<i>Zanthoxylum armatum</i> DC(Threatened)	Rutaceae/tree	Mukthruhi	Mouth ulcer, chronic fever, cough	Bark,fruits and seeds

DISCUSSION

Exploration of ethnomedicinal plants and the traditional knowledge on them by the different communities in the Imphal East and West district was conducted by this study. The study revealed that 30 medicinal plants species, belonging to 25 families and 30 genera, were of prime importance to the people of Imphal East and West districts, for their health care and also for trade. Exploration of medicinal plant in the state is also a matter of attraction to scientists, traders and pharmacists (Shankar and Rawat 2013). Sinha (1996) gave details accounts of medicinal plants of Manipur. Manipur State Medicinal Plants Board (2009) had tabulated details on trade names, quantity, market value, estimated selling price of medicinal plants of the region. Rawat et al (2013) mentions the habitat specification and mode of cultivation, and suggested conservation strategies for these plants. Devi K (2017) clearly mention specific plants and their corresponding use for the treatment of particular ailments.

Medicinal plants of north east India (Sharma N 2009) reviewed the status and conservation of the important medicinal plants of Manipur. Singh Rajendro and Singh Sumarjit (2009) gave details about wild medicinal plants and red list. Website of IUCN (2009), Shukla Vandbaishya A.K gave details b a contribution to the Manipur flora, Singh H.B Singh R.S and Sandhu R.S well described about herbal medicine of Manipur. The present study was an attempt to explore the medicinal plants for the treatment of many ailments, with special focus on two districts of Manipur as these two districts are densely populated.

Among the plant parts harvested in the study site, leaves were the most favored, followed by the root, bark, rhizome, whole plant, in that order. Plant parts were consumed in the form of decoction, juice or paste etc. The study also collected data on how the prepared medicine was used (taken in orally, applied on skin, steam inhaled, etc), mode of the preparation of the medicine, made from single plant or mixture of several plants, etc. And it is desirable to undertake further detailed ethnobotanical studies in these two districts, in order to recognize many more plant species used by the different communities for the treatment of many ailments. The present generation has neglected such valuable knowledge because of modernization and

urbanization. They have stopped cultivating medicinal plants at their backyards/kitchen gardens, even though the demand for the same is increasing. They are not even inclined to explore the forests for these plants. So, it is highly desirable to undertake cultivation (where possible) and the conservation (*in situ*) of the above-mentioned medicinal plants and their habitats.

This study recommends conservation measures such as establishment nurseries for breeding of medicinal plants, and designation of conservation areas for rare, endangered, endemic and threatened medicinal plants of this region. Further, local inhabitants need specialized and focused training on cultivation, protection and conservation of their precious medicinal plants, for their own socio-economic benefit. This study demonstrated that among the various plants collected from the forests and countryside of the districts of Imphal, a good many of them are of very high medicinal value. A variety of ailments are being treated by their use. In view of the low socio-economic status of several families, as well as the difficulty to access allopathic medicine, the easy availability of plant-based medicines is very cost effective.

Many local people and their families still depend on the local health traditions, as in rural home remedy medicines are more valued. Documentation of such indigenous traditional medicinal knowledge provides a repository of valuable information, while updating several databases globally. This study also demonstrated the dependence of the local people on the local flora as a source of medicine. To reduce impact on the flora, the ever-increasing demand for herbal medicine needs to be acknowledged, before many common plant species disappear into the list of endangered species.

The present study attempts to highlight the RET status of those plants which are commonly used as medicinal purposes in the study site. Out of the 30 medicinal plants, 16 plants like *Acorus calamus*, *Alpinia galanga*, *Butea monosperma*, *Cassia alata*, *Cinnamomum tamala*, *Clerodendrum serratum*, *Clerodendrum colebrookianum*, *Eryngium foetidum*, *Euphorbia hirta*, *Jatropha gossypifolia*, *Mimosa pudica*, *Ocimum basilicum*, *Sesbania grandiflora*, *Sida rhombifolia*, *Tinospora cordifolia* and *Zanthoxylum armatum* are included in the least concern and cultivated in many places though in present study site *Jatropha gossypifolia* are rare plants, *Acorus calamus*, *Butea monosperma*, *Cassia alata*, *Cinnamomum tamala*, *Clerodendrum serratum*, *Clerodendrum colebrookianum*, *Curcuma caesia*, *Hydichium coronarium* are found as endangered species. Plants such as *Iris bakeri*, *Orozylum indicum* and *Zanthoxylum armatum* are belongs threatened species. Within India, *Allium hookeri* is found only in northeastern states such as Manipur, Meghalaya, and Arunachal Pradesh, where it is a common vegetable and widely cultivated. *Eryngium foetidum* is commonly used as a culinary spice for meat dishes. *Gynuria nepalensis*, also called 'first-aid plant', is used to stop bleeding in wounds and cuts, by applying leaf juice to affected areas. Sometimes, the juice is applied as a balm for headaches. These plants are growth and found as wild in present study site. And so far, no data has found for plants status of *Gynuria nepalensis*.

CONCLUSION

We found thirty medicinal plant species used by locals are already been well recognized as medicine in Ayurveda. The study found that people living close to forest and agricultural land had more knowledge on various ailments and treatment. Elders had more ethnobotanical knowledge than the young and women had more knowledge on traditional medicinal plants compared to men. It was recommended to cultivate these medicinal plants in their backyard and agriculture land, to reduce the dependency on wild populations. Population has to be protected from fire, grazing by domestic animals. The individuals of Imphal east and west utilized numerous therapeutic plants because of modernization, urbanization overwhelmingly jhoom development alongside the adjustments in the traditions and custom. Individuals have quit utilizing these restorative plants subsequently it is important to take up to ration and utilize that indigenous information to serve the network get comfortable the Imphal east and west specifically and rest of the human on the planet.

Pictures of some important medicinal plant of Imphal (East and West) Districts of Manipur, North East, India



(1) *Acorus calamus*



(2) *Andrographis paniculata*



(3) *Allium hookeri*



(4) *Alpinia galanga*



(5) *Asparagus filicinus*



(6) *Cinnamomum tamala*



(7) *Clerodendrum colebrookianum*



(8) *Curcuma caesia*



(9) *Cymbopogon citratus*



(10) *Eryngium foetidum*



(11) *Euphorbia hirta*



(12) *Gynura nepalensis*



(13) *Hedychium coronarium*



(14) *Iris bakeri*



(15) *Mimosa pudica*



(16) *Oroxylum indicum*



(17) *Ocimum basilicum*



(18) *Piper longum*



(19) *Polygonum orientale*



(20) *Sesbania grandiflora*



(21) *Sida rhombifolia*

(22) *Smilax ovalifolia*

(23) *Tinospora cordifolia*

(24) *Zanthoxylum armatum*

References

- 1) Bhuyan Monimugdha. (February 2015)., Comparative Study of Ethnomedicine among the Tribes of North East India. *International Research Journal of Social Sciences*. ISSN 2319–3565. Vol. 4(2), Pp 27-32,
- 2) Devi Wangkhem Indira, Devi Guruaribam Shantibala and Singh Chingakham Brajakisor. (Oct-Dec,2011)., Traditional Herbal Medicine used for the Treatment of Diabetes in Manipur, India. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*.ISSN:0975-8585.Vol 2(4), Pp 710-715.
- 3) Devi Khoirom Yaiphabi, Devi Maibam Haripriya and Singh Potsangbam Kumar. (2017)., Survey of medicinal plants in Bishnupur District, Manipur, North Eastern India. *International journal of Applied Research*; ISSN:2394-5896,Vol.3(4); Pp 462-471.
- 4) Devi OkramAbemsana, Das Mamoni, Saikia Ananta, Das Pranati and Devi OkramBijaya. (October 2017)., Ethnomedicinal plants of Manipur used for the treatment of inflammatory diseases.. *International Journal of Current Research*. Vol 9, Issue 10. ISSN:0975-833X. Pp.59608-59615.
- 5) Devi Leishangthem Ranibala and Das Ajit Kumar. (March 2015)., Study on the Medicinal Plants used for Dermatological Healthcare Management Practices by The Paite Tribe of Manipur, India. *International Journal for Innovative Research in Science & Technology*, Volume 1, Issue 10.
- 6) Devi Khumbongmayum Ashalata, Khan M L and Tripathi R S. January (2005), Ethnomedicinal plants in the sacred groves of Manipur. *Indian journal of Traditional Knowledge*. Vol 4(1), Pp.21-32.
- 7) Devi Khoirom Yaiphabi, Devi Maibam Haripriya and Singh Potsangbam Kumar (2017), “Survey of Medicinal Plants in Bishnupur district, Manipur, North Eastern India.” *International Journal of Applied Research*. ISSN:2394-5869, Vol.33(4), Pp.462-471.
- 8) Devi Thokchom Anita, Das Talukdar Anupam, Singh Chingakham Brajakishore, Singh Ningthoujam Sanjoy and Dutta Choudhury Manabendra. (2018)., Traditional Usage of Ethnomedicinal Plants in Treating Liver Disorders at Manipur, North East India. *European Journal Medicinal Plants*. 23(3): 1-10, Article no. EJMP.41479, ISSN: 2231-0894, NLM ID: 101583475
- 9) Devi Khumbongmayum Ashalata, Khan M.L., Tripathi R.S. (Jan 2005)., Ethnomedicinal Plants in the Sacred groved of Manipur. *Indian journal of traditional knowledge*. Vol.4(1), Pp 21-32
- 10) Hazarika Ridip, Singh Abujam Santoshkumar and Neog Bijoy. (2012)., Ethno Medicinal Studies of Common Plants of Assam and Manipur. *International Journal of Pharmaceutical & Biological Archives*, Vol. 3(4), Pp.809-815.

- 11) Handique P.J. (2009)., Medicinal Plants of North East India: Status Diversity, Conservation, Cultivation and Trade.
- 12) Leishangthem S. and Sharma L. Dinendra. (September 2014)., Study of some important medicinal plants found in Imphal-East District, Manipur, India. International Journal of Scientific and Research Publications, Volume 4, Issue 9, ISSN 2250-3153.
- 13) Ningombam. D.S., Devi. S.P, Singh P.K., Athokpam Pinokiyo and Thongam. Bisheswori. (Jan 2014) Documentation and Assessment on Knowledge of Ethno-medicinal Practitioners: A case study on local Meetei healers of Manipur. ISOR Journal of Pharmacy and Biological Sciences., ISSN:2278-3008 Vol.9 (1), Pp 53 – 70.
- 14) Panmei Robert, Gajurel P.R. and Singh B. (Oct-Dec,2016)., Ethnobotany and Nutritional values of some selected wild edible plants used by Rongmei tribes of Manipur, North East,India. International Journal of Applied Biology and Pharmaceutical Technology. ISSN: 0976-4550. Volume-7, Issue-4, Coden IJABFP-CAS-USA.
- 15) Plant Folk-Lore of North Eastern States: An Analysis of critical characters on north-east medicinal plants. (2016)., Pub: Manipur State Medicinal Plants Board., Imphal West-795004
- 16) Rai Prabhat Kumar and Lalramnghinglova H. (2011),Ethnomedicinal Plants of India with Special Reference to an Indo-Burma Hotspot Region: An Overview. Ethno botany Research and Application, Vol 9,Pp379-420.
- 17) 17. Shukla. V and Baishya. A.K. (1979)., “A contribution to the flora of Manipur”, J Bombay Nat. Hist. Soc., Vol 76, Issue No.2.
- 18) Shankar Rama, Deb S and Sharma BK. (2015)., Traditional Healing Practices in North East India. Indian Journal of History of Science, 50.2, Pp 324-332
- 19) Singh. H.B, Singh. R.S and Sandhu J.S. (2003)., “Herbal Medicine of Manipur” Daya Publishing House, Delhi, Pp I – 5I.
- 20) Sanglakpam Purbashree, Mathur Roshni Rajamohan and Pandey Arun Kumar. (September 2012)., Ethnobotany of *Chothe* tribe of Bishnupur district (Manipur)., Indian journals of Natural product and resources.vol.3(3), Pp 414-425.
- 21) Singh Th. Tomba, Sharma H. Rajanikanta, Devi A. Radhapyari and Sharma H. Manoranjan.(2014)., Plants used in the treatment of fever by the scheduled caste community of Andro village in Imphal East District, Manipur, India. Trends in Life Sciences: An International peer review journal, Vol 3 Issue 3.ISSN:2319-4731(p).
- 22) Sharma Mrinmoy, Das Biswajit. (2018)., Medicinal Plants of North-East Region of India: A Small Review. International journal of current pharmaceutical Research.ISSN-0975-7066 vol 10, Issue 4.
- 23) Shankar Rama and Rawat M. S. (September 2013)., Conservation and cultivation of threatened and high valued medicinal plants in North East India. International Journal of Biodiversity and Conservation. ISSN 2141-243X.Vol 5(9), Pp 584-591.
- 24) 24. Singh Yumnam Rajesh, Devi CH. Onita, Singh Abujam Santosh Kumar and Chetia D. (2012)., Study on the Ethnomedicinal System of Manipur. International Journal of Pharmaceutical & Biological Archives; ISSN-0976-3333, Vol. 3(3):507-511.
- 25) 25. Singh S and Jamir N.S. (2016)., Common species plants used as medicine by the Tangkhul tribe of Ukhrul District, Manipur, India. International Journal of Scientific and Research Publication; ISSN-2250-3153, Vol 6(7).
- 26) 26. Singh N Rajendro and Singh M Sumarjit.(2009)., Wild Medicinals plants of Manipur included in Red List. Asian Agri-History vol. 13(3). Pp (221-225).

- 27) Sinha.S.C.(1996)., Medicinal Plants of Manipur” Pub: Manipur Assn for Science & Society (MASS),Imphal-795001.
- 28) Vedaja S. (1998)., Manipur: Geography and Regional Development. Rajesh Publications, New Delhi, India.
- 29) Website (2009) IUCN red list of threatened species.
- 30) Website: <https://www.ipni.org/>,<http://www.catalogueoflife.org/col> [http://www.tropicos.org /Home.aspx](http://www.tropicos.org/Home.aspx),
<https://eol.org/pages/468159>,<http://powo.science.kew.org/>,<http://envis.frlht.org/mpcc-species>,
<http://www.flowersofindia.net/botanical.html>
- 31) Yumnam JY & Tripathi OP. (January 2012)., Traditional knowledge of eating raw plants by the *Meitei* of Manipur as medicine/nutrient supplement in their diet. Indian Journal of Traditional Knowledge. ISSN-0975-1068 Vol.11 (1), pp. 45-50.